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2011 SHARP-TAILED GROUSE HARVEST SURVEY

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ABSTRACT

A survey was completed to determine the number of people hunting sharp-tailed grouse, the number of days hunting, and the number of sharp-tailed grouse harvested in Michigan. In 2011, 2,344 hunters obtained a free sharp-tailed grouse stamp allowing them to hunt sharp-tailed grouse, which was 9% less than last year (2,571 stamp holders in 2010). About 13% of the people obtaining a stamp in 2011 hunted sharp-tailed grouse (294 hunters). The number of hunters declined 26% between 2010 and 2011 (294 versus 398). In 2011, sharp-tailed grouse hunters spent 1,148 days afield and harvested 178 sharp-tailed grouse ($\bar{x} = 0.6$ grouse/hunter). Hunting effort declined 20% and harvest declined 18% between 2010 and 2011. About 25% of the hunters in 2011 harvested at least one sharp-tailed grouse. About 44% of hunters were either satisfied or somewhat satisfied with their hunting experience. Moreover, 81% of hunters reported that they were very likely or somewhat likely to continue hunting sharp-tailed grouse during the next two years.

INTRODUCTION

In 2011, hunters could hunt sharp-tailed grouse (*Tympanuchus phasianellus*) in portions of two counties in the Upper Peninsula of Michigan (Chippewa and Mackinac counties) during October 10-31 (Figure 1). About 17% of area open to hunting was publicly owned land (i.e., land owned by federal, state, county, or township governmental agencies). In order to hunt sharp-tailed grouse, hunters were required to obtain a small game hunting license and a free sharp-tailed grouse hunting stamp. Hunters could harvest up to two birds per day with a seasonal limit of six birds.



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The Department of Natural Resources (DNR) and Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys.

METHODS

Following the 2011 sharp-tailed grouse hunting season, a questionnaire was sent to 2,344 people that had obtained a sharp-tailed grouse stamp. Hunters receiving the questionnaire were asked to report if they hunted sharp-tailed grouse, number of days spent afield, and number of sharp-tailed grouse they harvested. Hunters also were asked to indicate whether they normally hunted with the aid of a dog, satisfaction with the hunting season, and the likelihood of hunting sharp-tailed grouse during the next two years.

Estimates were calculated using a simple random sampling design (Cochran 1977) and were presented along with their 95% confidence limit (CL). This CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Estimates were not adjusted for possible response or nonresponse bias.

Statistical tests are used routinely to determine the likelihood that differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-December 2011, and up to two follow-up questionnaires were mailed to nonrespondents. Although 2,344 people were sent the questionnaire, 27 surveys were undeliverable resulting in an adjusted sample size of 2,307. Questionnaires were returned by 1,584 people, yielding a 69% adjusted response rate.

RESULTS

In 2011, 2,344 people obtained a stamp to hunt sharp-tailed grouse, which was 9% less than last year (2,571 stamp holders in 2010). Males obtained most of the stamps (2,246) in 2011. The average age of stamp buyers was 45 years (Figure 2), and nearly 7% (164) of the stamp holders were younger than 17 years old.

About $13 \pm 1\%$ of the people that obtained a stamp went afield to hunt sharp-tailed grouse (294 hunters, Table 1). The number of people hunting grouse declined significantly by 26% between 2010 and 2011. These hunters most frequently hunted during the weekend (Figures 3 and 4). Hunters spent 1,148 days hunting ($\bar{x} = 3.9 \pm 0.3$ days/hunter), and harvested 178 sharp-tailed grouse ($\bar{x} = 0.6$ birds/hunter). Hunting effort declined significantly by 20%. Harvest declined by 18% between 2010 and 2011; however, this decline was not significantly different. (In 2010, grouse hunters spent 1,429 days afield and harvested 217 sharp-tailed grouse.) The estimated number of grouse seen per hunter declined significantly

by 30% between 2010 and 2011 (8.3 grouse per hunter in 2010 and 5.8 grouse per hunter in 2011).

About 25% of hunters in 2011 successfully harvested at least one sharp-tailed grouse. About 10% of hunters took one grouse; 7% took two grouse, 3% took three grouse; 2% took four grouse; and about 3% took five or six grouse (Figure 5). Hunting success was higher on private lands than public lands. In addition, most grouse were taken from Chippewa County.

Hunters most frequently hunted sharp-tailed grouse with the aid of a dog (Table 2); $60 \pm 4\%$ of the hunters used a dog. The proportion of hunters harvesting a sharp-tailed grouse was similar among hunters using a dog and hunters not using a dog (24% versus 26%); however, hunters using dogs appeared more efficient because it required less hunting effort to see or harvest a grouse than for hunters without a dog.

Of the estimated 294 people hunting sharp-tailed grouse in 2011, 44% of these hunters were satisfied with their hunting experience (Table 3). Nearly 24% of the hunters rated their experience as neutral. About 26% of the hunters were dissatisfied with their experience. Overall hunter satisfaction declined significantly between 2010 and 2011 (52% versus 44% of hunters satisfied).

About 33% of hunters in 2011 were satisfied with the number of grouse seen, and 18% were satisfied with the number of grouse harvested. Compared to 2010, significantly fewer hunters were satisfied with the number of grouse seen in 2011 (41% versus 33% of hunters satisfied). In addition, the proportion of hunters dissatisfied with the number of grouse harvested increased significantly between 2010 and 2011 (33% versus 42% of hunters were dissatisfied).

Among people that hunted sharp-tailed grouse in 2011, $81 \pm 3\%$ of the hunters were very likely or somewhat likely to hunt sharp-tailed grouse during the next two years. About $13 \pm 3\%$ of the hunters indicated that they were not very likely or not at all likely to hunt sharp-tailed grouse during the next two years. About 4% of the hunters were not sure whether they would hunt sharp-tailed grouse again during the next two years. Finally, 3% of the hunters failed to indicate whether they would hunt sharp-tailed grouse again. Compared to 2010, significantly fewer hunters in 2011 were likely to hunt grouse during the next two years (81% versus 89% of hunters were likely to hunt in the future).

ACKNOWLEDGEMENTS

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- Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? *Journal of Insect Science* 3:34.

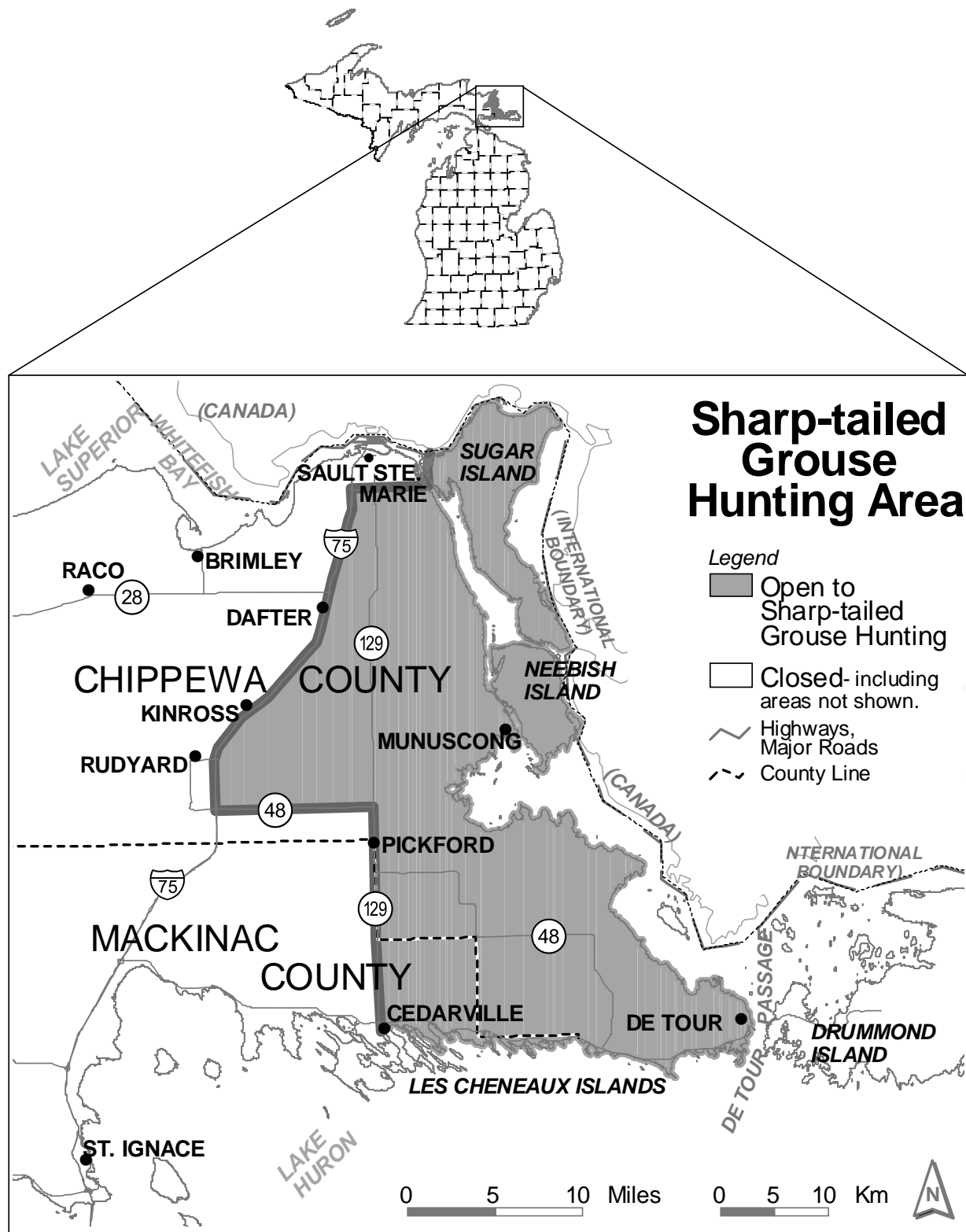


Figure 1. Area open for hunting sharp-tailed grouse in Michigan during 2011 hunting season.

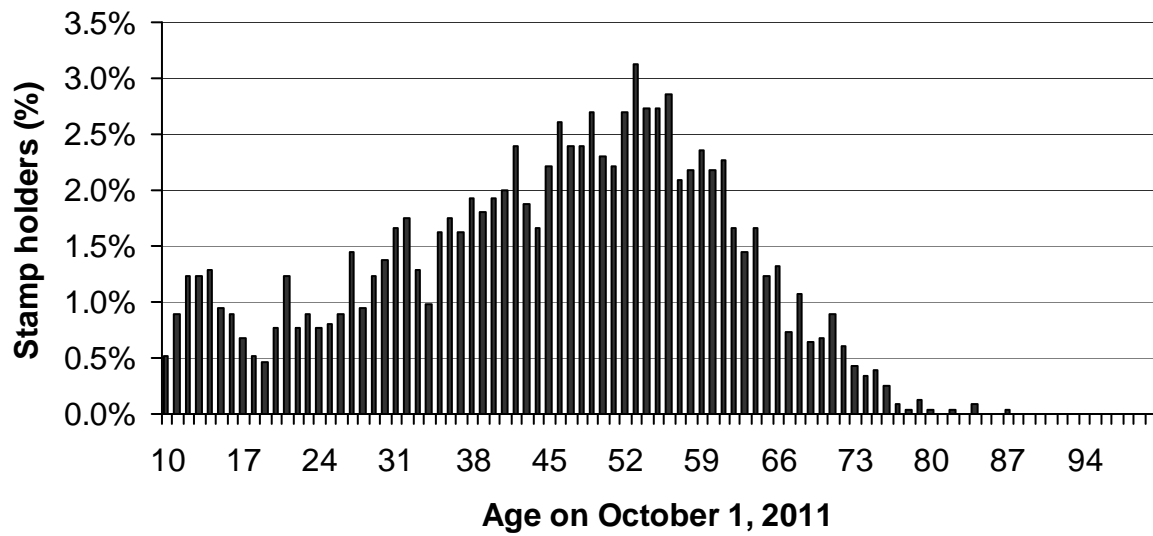


Figure 2. Age of people that obtained a sharp-tailed grouse hunting stamp in Michigan for the 2011 sharp-tailed grouse hunting season (\bar{x} = 45 years). Stamps were obtained by 2,344 people.

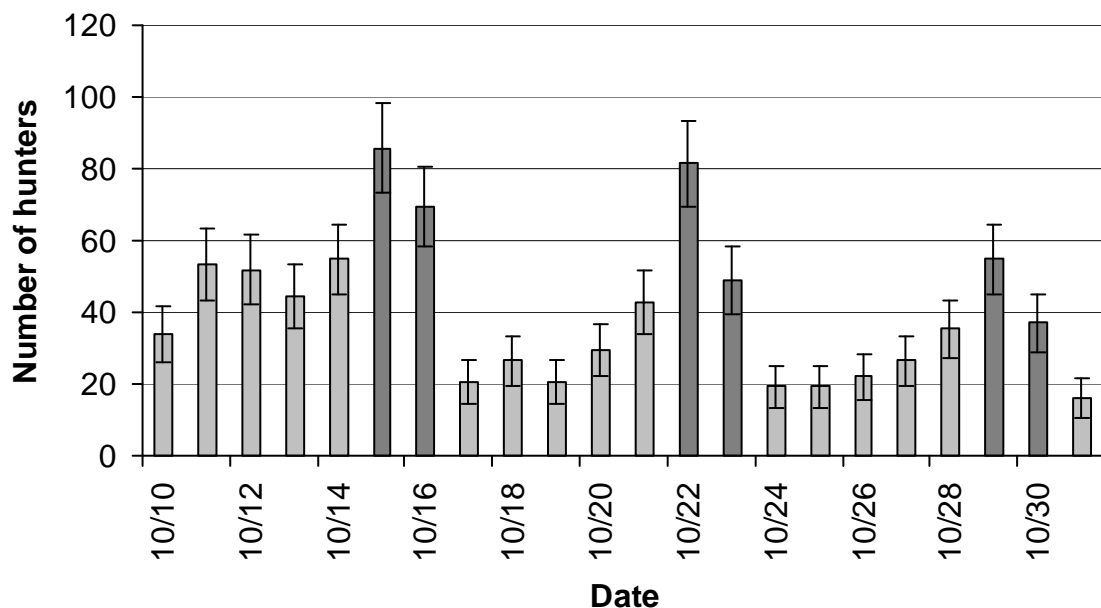


Figure 3. Estimated number of people hunting sharp-tailed grouse by date during the 2011 hunting season. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

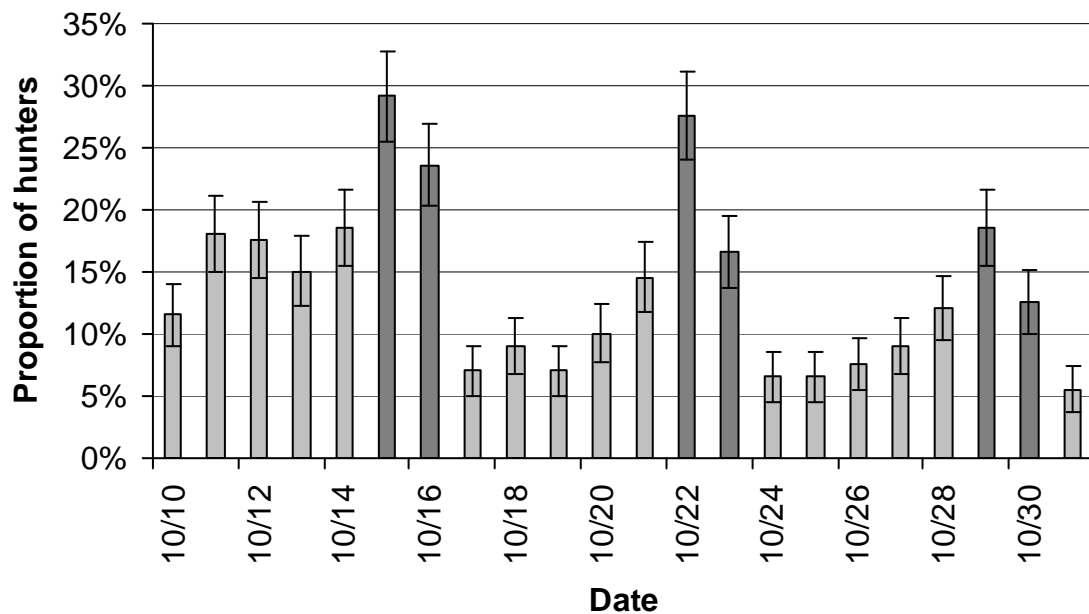


Figure 4. Estimated proportion of sharp-tailed grouse hunters afield by date during the 2011 hunting season. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

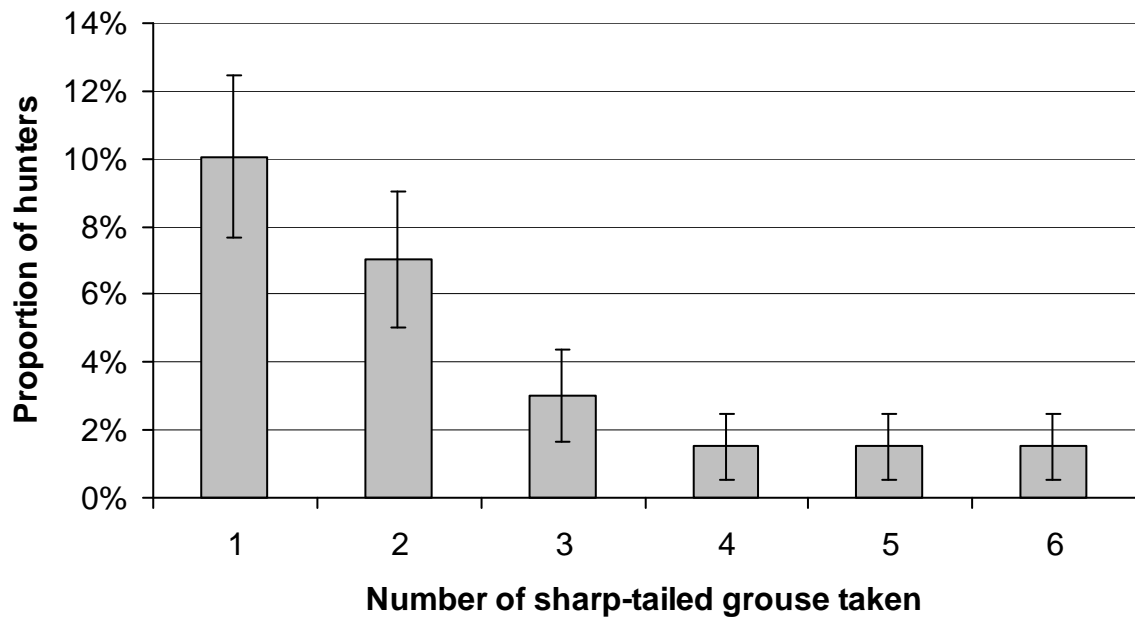


Figure 5. Estimated proportion of sharp-tailed grouse hunters that harvested one or more grouse during the 2011 hunting season, summarized by number of birds taken. Vertical bars represent the 95% confidence interval.

Table 1. Estimated number of hunters, hunting effort, sharp-tailed grouse seen, harvest, hunter success, grouse seen per hunter, and harvest per hunter during the 2011 sharp-tailed grouse hunting season in Michigan, summarized by county and land type where hunting occurred (private or public).

Area and land type	Hunters		Hunting effort (days)		Grouse seen		Harvest		Success ^a		Grouse seen per hunter		Harvest per hunter ^b	
	95%		95%		95%		95%		95%		95%		95%	
	No.	CL	No.	CL	No.	CL	No.	CL	%	CL	No.	CL	No.	CL
Chippewa County														
Private lands	59	10	191	58	388	132	41	15	33	8	6.6	1.9	0.7	0.2
Public lands	89	13	323	64	269	125	21	10	13	5	3.0	1.4	0.2	0.1
Both lands	46	9	203	56	367	253	28	14	26	9	8.0	5.4	0.6	0.3
Unknown	1	2	3	3	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Subtotal	195	18	719	102	1,024	311	90	23	22	4	5.2	1.5	0.5	0.1
Mackinac County														
Private lands	10	4	34	18	65	42	12	10	43	23	6.3	3.3	1.1	0.9
Public lands	31	8	81	23	40	34	3	3	5	5	1.3	1.1	0.1	0.1
Both lands	18	6	80	32	47	24	9	6	33	16	2.7	1.1	1.3	0.8
Unknown	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Subtotal	59	10	195	43	152	59	24	12	20	7	2.6	0.9	0.6	0.3
Unknown County														
Subtotal	68	11	234	43	533	211	50	17	30	8	7.8	2.9	0.7	0.2
All areas														
Private lands	87	12	297	65	579	151	67	19	37	7	6.6	1.5	0.8	0.2
Public lands	142	16	518	77	503	141	46	17	15	4	3.5	0.9	0.3	0.1
Both lands	67	11	327	70	627	320	52	19	29	8	9.4	4.6	1.0	0.4
Unknown	3	2	6	5	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Grand total ^c	294	22	1,148	121	1,709	380	178	38	25	3	5.8	1.2	0.6	0.1

^aPercentage of hunters harvesting at least one sharp-tailed grouse.

^bThe season bag limit was six birds.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

Table 2. Estimated number of hunters, hunting effort, sharp-tailed grouse seen, harvest, hunter success, grouse seen per hunter, and harvest per hunter during the 2011 sharp-tailed grouse hunting season in Michigan, summarized by primary hunting method (used dogs or no dogs used).

Primary hunt method	Hunters		Hunting effort (days)		Grouse seen		Harvest		Success ^a		Grouse seen per hunter		Harvest per hunter ^b	
	95%		95%		95%		95%		95%		95%		95%	
	No.	CL	No.	CL	No.	CL	No.	CL	%	CL	No.	CL	No.	CL
Used dog	176	17	553	72	1,094	310	92	23	24	4	6.2	1.7	0.5	0.1
Did not use dog	114	14	586	100	610	221	71	21	26	6	5.4	1.8	0.7	0.3
Unknown	4	3	9	6	6	7	1	2	33	37	1.3	1.5	0.3	0.4
Total	294	22	1,148	121	1,709	380	178	38	25	3	5.8	1.2	0.6	0.1

^aPercentage of hunters harvesting at least one sharp-tailed grouse.

^bThe season bag limit was six birds.

Table 3. Hunters' level of satisfaction with the number of sharp-tailed grouse seen, grouse harvested, and overall hunting experience during the 2011 sharp-tailed grouse hunting season.

Index		Satisfaction level						No answer or not applicable	
		Satisfied ^a		Neutral		Dissatisfied ^b			
		95%		95%		95%		95%	
		%	CL	%	CL	%	CL	%	CL
Grouse seen		33	4	24	3	38	4	5	2
Grouse harvested		18	3	26	3	42	4	14	3
Hunting experience		44	4	24	3	26	3	7	2

^aIncluded hunters who were "very satisfied" or "somewhat satisfied."

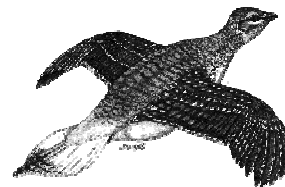
^bIncluded hunters who were "somewhat dissatisfied" or "strongly dissatisfied."

Appendix A. The questionnaire sent to a sample of sharp-tailed grouse hunters in this study.



2011 SHARP-TAILED GROUSE HARVEST REPORT

This information is requested under authority of Part 435, 1994 PA 451, M.C.L. 324.43539.



It is important that you complete and return this questionnaire even if you did not hunt or harvest any sharp-tailed grouse in Michigan during 2011.

1. Did you attempt to hunt sharp-tailed grouse in Michigan during the 2011 season?

¹ ☐ Yes

² ☐ No, Skip to question number 6.

2. If you attempted to hunt sharp-tailed grouse during the 2011 season, please complete the following table. Sharp-tailed grouse could be hunted only in portions of Chippewa and Mackinac counties, and you could harvest a maximum of 6 grouse during the entire season.

COUNTY HUNTED (List each county that you hunted)	NUMBER OF DAYS HUNTED (maximum=22 days)	TYPE OF LAND	NUMBER OF SHARP-TAILED GROUSE SEEN	NUMBER OF SHARP-TAILED GROUSE HARVESTED (maximum=6 grouse)
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both		
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both		

3. Using the adjacent calendar, please circle [O] the days that you hunted. Circle only the days you actually went afield to hunt sharp-tailed grouse in Michigan.

October 2011						
S	M	T	W	T	F	S
	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

4. Did you normally use a dog to hunt sharp-tailed grouse in Michigan during 2011?

¹ ☐ Yes

² ☐ No

Questions continued on next page.

5. Please indicate how satisfied or dissatisfied you were with the following for the 2011 sharp-tailed grouse hunting season in Michigan:

(Select one choice per item.)

	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Strongly Dissatisfied	Not Applicable
a. Number of sharp-tailed grouse you saw.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
b. Number of sharp-tailed grouse you harvested.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
c. Your overall sharp-tailed grouse hunting experience.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

6. How likely is it that you will hunt sharp-tailed grouse in Michigan in the next 2 years?

- 1 ☐ Very likely 2 ☐ Somewhat likely 3 ☐ Not very likely 4 ☐ Not at all likely 5 ☐ Not sure

7. Do you have any comments or suggestions about sharp-tailed grouse management in Michigan?

*Please return questionnaire in the enclosed postage-paid envelope.
Thank you for your help.*